






**Work Order ID 68922**



Monday, April 25, 2011 1:46:34 PM



Page 1

Item ID: D6104-005 Accept  Setup Start   
Revision ID:  
Item Name: Round Billet, 17-4 Stop   
Start Date: 4/25/2011 Start Qty: 10.00  Cust Item ID:  
Required Date: 4/29/2011 Req'd Qty: 10.00  Customer:

**Reference:**

Approvals: Process Plan: CL Date: 11/04/26 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start   
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop 

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr								
D6104	Rev B								

100		0.00							
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	PURCHASING								
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Purchasing	Memo	0.00							
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Purchasing Issue P/O: 13976 ☐ a) Description: S.S round billet ☐ b) Ø4.00" x 5.10" long ☐ c) Tolerance on all dimensions are +0.030"/-0.000" ☐ d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630) ☐ e) One blank makes 2 parts ☐ f) Material certification required

110	Receive & Inspect for Damage & Mat'l Certs	0.00							
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Packaging	Memo	0.00							
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Packaging Ensure material certification is attached

120	QC6- Inspect dimensions to drawing	0.00							
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QC	Memo	0.00							
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Quality Control Ensure Material certification comply to Dwg D6104

CL 11/04/28 (10)

P4/10/12 (10)

CL 11/5/12

10

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# Work Order ID 68922



Monday, April 25, 2011 1:46:34 PM



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Item ID: D6104-005 Accept  Setup Start   
Revision ID: Stop   
Item Name: Round Billet, 17-4  
Start Date: 4/25/2011 Start Qty: 10.00  Cust Item ID:  
Required Date: 4/29/2011 Req'd Qty: 10.00  Customer:  
Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start   
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop 

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130  Packaging Packaging	Identify as per dwg & Stock Location: <u>CNC</u>  Memo	0.00  0.00		SA	W5/12	10	1		
140  QC Quality Control	QC21- Final Inspection - Work Order Release  Memo	0.00  0.00							W5/12 MP 11-05-12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Monday, April 25, 2011 1:46:45 PM

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Work Order ID: 68922



Parent Item: D6104-005



Parent Item Name: Round Billet, 17-4



Start Date: 4/25/2011

Required Date: 4/29/2011

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP A: ☐01.05.08☐New Issue EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6104-005P  17-4 SS Roundbar 4.00"OD		Purchased	No			110	Each	0.0000	1 	10			

*Handwritten signature and date: 4/25/11 (10)*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

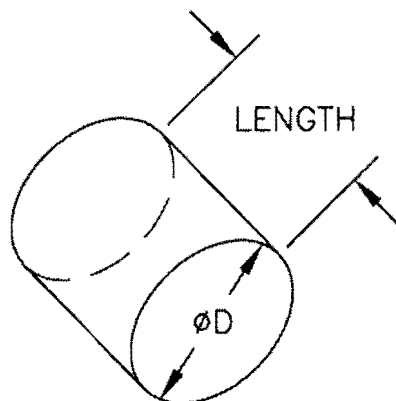


DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29 *[Signature]*

## SPECIFICATION CONTROL DRAWING



SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. *68922*

*2/11/04 JS*

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
<del>D6104-005</del>	<del>17-4 PH STAINLESS STEEL</del>	<del>Ø4.00</del>	<del>5.10</del>
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries





Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO13976

Purchase Order Date 4/28/2011

PO Print Date 4/28/2011

Page Number 1 of 2

Order From : VC-COP001  
THYSSENKRUPP MATERIALS CA LTD  
O/A VPK METAL- C/O T27540/PO BOX 4275,POSTAL"A"  
TORONTO, ON M5W 5V8  
CA

Contact Name		Buyer	Chantal Lavoie
Vendor Phone	905 669 9444	Requisition Nbr	
Vendor Fax	905 738 9033	Tax Resale Nbr	10127-2607
Vendor Account Nbr		Terms	Net 30
		Currency	CAD
		FOB	Destination-Collect

Ship To : DART AEROSPACE LTD 1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**FAKED**  
6/21/12

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	D6103-003P	round alum billet	5/6/2011 Yes	12.00 Each	Yours ppd	\$65.0000	\$780.00
		<b>Special Inst:</b> AS PER DWG D6103 REV. B B68918 MATERIAL: 7075-T7351 AS PER QQ-A-225/9 SIZE: 3.500" X 12.500" LONG TOLERANCE ON ALL DIMENSION ARE +0.030"/-0.000"					
2	D6104-005P	17-4 SS Roundbar 4.00"OD	5/6/2011 Yes	10.00 Each	Yours ppd	\$82.5000	\$825.00
		<b>Special Inst:</b> AS PER DWG D6104 REV. B B68922 MATERIAL: 17-4PH STAINLESS STEEL AS PER AMS 5643 OR AISI-630 TOLERANCE ON ALL DIMENSION ARE +0.030"/-0.000"					
3	M2024T3S.020	Alum. sheet .020	5/6/2011 Yes	48.00 sf	Yours ppd	\$2.8646	\$137.50

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required when applicable

Change Nbr: 1

Change Date: 4/28/2011



# B I L L O F L A D I N G

No: PEC 710428.

Ship From:  
THYSSENKRUPP MATERIALS NA  
2821 LANGSTAFF ROAD  
CONCORD, ONTARIO L4K 5C6  
Tel: 905 669 9444 Fax: 9057389033

Ship Date 12May11 at 13:36 From PFW  
Probill  
Via VIM TRANSFER TRUCK  
FOB CONCORD  
Frt PREPAID  
Route 0- 0 Manifest  
Vhcle Trailer  
Slp STAN IVERS (905-532-1350)  
Sold To: ( 20115)  
DART AEROSPACE  
1270 ABERDEEN ST  
HAWKESBURY, ON K6A 1K7

Ship To: ( 1)  
DART AEROSPACE  
1270 ABERDEEN ST  
HAWKESBURY, ON K6A 1K7  
Tel: 613-632-9577 Fax: 613-632-1053

## B I L L O F L A D I N G

1) Our Order PEC-326915- 1 Your PO # 13976  
Part # ~~ASTM A564~~ Rel #  
~~STAINLESS STEEL ROUND BAR 17-4 HFRT~~  
~~4.00" DIA-X-5.1000"~~

Heat Number	Tag No	Quantity	PCS	Wt LBS
G17441	193157	4 ' 3.0000 "	10	182

2) Our Order PEC-326915- 2 Your PO # 13976  
Part # QQ-A-250/4 Rel #  
ALUMINUM SHEET 2024 -T3  
.0400 Nom X 48.0000" X 144.0000"

Heat Number	Tag No	Quantity	PCS	Wt LBS
183665	193158	192.00 SFT	4	111

3) Our Order PEC-326915- 3 Your PO # 13976  
Part # -4-6 DAYS A.R.O QQ-A-250/4 Rel #  
ALUMINUM SHEET 2024 -T3  
.0500 Nom X 48.0000" X 144.0000"

Heat Number	Tag No	Quantity	PCS	Wt LBS
537782A5	193160	144.00 SFT	3	104

4) Our Order PEC-326915- 4 Your PO # 13976  
ALUMINUM SHEET 2024 -T3  
.0200 Nom X 48.0000" X 144.0000"

Heat Number	Tag No	Quantity	PCS	Wt LBS
526944A4	193161	48.00 SFT	1	14

TOTAL:	Tags	PCS	LBS
	4	18	411

Page: 1 ....Continued

TOUTES ERREURS ET/OU MARCHANDISES MANQUANTES DOIVENT ÊTRE  
RAPPORTÉES IMMÉDIATEMENT.  
ERRORS OR SHORTAGE MUST BE REPORTED IMMEDIATELY  
RETOUR DE MARCHANDISES AVEC NOTRE NUMERO D'APPROBATION SEULEMENT.  
MERCHANDISE MAY NOT BE RETURNED WITHOUT OUR APPROVAL NUMBER.



## CERTIFICATE OF TESTS

000772059

## ABNAHMEPRUEFZEUGNIS

## CERTIFICAT DE CONTROLE

**TALLEY METALS****A Carpenter Company**

Talley Metals Technology, Inc.

P.O. Box 2498

Hartsville, SC, 29551

Tel. (843) 335-7540 Fax. (843) 335-6465

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2011-04-13

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKÄUFER / VENDEUR

Page - 1

CUSTOMER ORDER NO./BESTELL - NR./N° DE COMMANDE	CARPENTER NO./WERKS - NR./N° DE REFERENCE INTERNE	DATE/DATUM/DATE	WEIGHT/GEWICHT/POIDS
5400095931-0120	W92633 W92633	2011-04-13	2525.0

HEAT NUMBER / SCHMELZE-NR./N° DE COULEE:

G17441

PRODUCT DESCRIPTION: TYPE 17-4 SOLUTION ANNEALED ROUGH TURNED  
 ----- PART NUMBER: SSRD00474

SPECIFICATION: TALLEY 174-TIA CAP OF H900 (01/11/99)

AMS 2303 REV F (08/ /10)

AMS 2315 REV F (01/ /08)

AMS 5643 REV R (02/ /08)

ASTM-A484-10

ASTM-A564-10

ASME-SA564 2010 EDITION (TYPE 630)

ASTM-F899-10 (CHEM ONLY)

SIZE 4.000000 IN. (101.60 MM) RD BAR

PRIMARY HEAT CHEMISTRY (WT%): (TEST METHOD IS SHOWN IN PARENTHESIS)

C (COM)	MN (XRF)	SI (XRF)	P (XRF)	S (COM)	CR (XRF)
0.027	0.84	0.42	0.021	0.020	15.34
NI (XRF)	MO (XRF)	CU (XRF)	N (FUS)	CB (XRF)	TA (XRF)
4.25	0.17	3.70	0.034	0.26	LT .01

CB+TA

0.27

THIS HEAT MELTED BY THE ELECTRIC ARC/AOD PROCESSES

DISCS MACROETCHED AND APPROVED

HARDNESS AS SHIPPED, HBW - 360 (MIDRADIUS)

MAGNETIC PARTICLE: FREQUENCY = 0 / SEVERITY = 0

MICROSTRUCTURE - FERRITE 1.39%

SOLUTION ANNEALED - 1900 F, 1 HOUR - RAPID COOL

CONTINUED ON NEXT PAGE

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## CERTIFICATE OF TESTS

000772059

## ABNAHMEPRUEFZEUGNIS

## CERTIFICAT DE CONTROLE

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P.O. Box 2498

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2011-04-13

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKÄUFER / VENDEUR

Page - 2

CUSTOMER ORDER NO./BESTELL - NR./N° DE COMMANDE	CARPENTER NO./WERKS - NR./N° DE REFERENCE INTERNE	DATE/DATE/DATE	WEIGHT/GEWICHT/POIDS
5400095931-0120	W92633 W92633	2011-04-13	2525.0

MEATNUMBER / SCHMELZE-NR./N° DE COULEE

G17441

## CAPABILITY

900 F ( 482 C), 01 HR

AIR COOL

(T) TRANSVERSE (L) LONGITUDINAL	L
YIELD STRENGTH, (0.20 %) KSI (MPA)	188.0 ( 1296)
TENSILE STRENGTH, KSI (MPA)	206.0 ( 1420)
ELONGATION IN 2.00", %	13.0
REDUCTION OF AREA, %	42.0
HARDNESS, HBW	408.0

(CONVERTED FROM TENSILE STRENGTH)

NO WELD REPAIR PERFORMED  
 MATERIAL PRODUCED ON THIS ORDER WAS MELTED AND MANUFACTURED IN THE U.S.A.  
 MATERIAL HAS BEEN MELTED IN USA OR QUALIFYING COUNTRY TO DFARS REQUIREMENTS 252.225-7014 WITH ALTERNATE 1 FOR QUALIFYING COUNTRY 225.872.1, SUPERSEDED BY DFARS REQUIREMENTS DFARS 252.225-7008 AND 252.225-7009.  
 WE HEREBY CERTIFY THAT THE ABOVE TEST DATA ARE IN ACCORDANCE WITH THE PURCHASE ORDER AND SPECIFICATION REQUIREMENTS. CERTIFICATE OF TEST IS PREPARED IN ACCORDANCE WITH PARAGRAPH 3.1 OF EN 10204 (DIN50049)

STEPHANIE E. MCCULLUM  
 QUALITY ASSURANCE ENGINEER  
 CARPENTER TECHNOLOGY CORPORATION

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